



FIGURE 1.—Young-of-the-year American shad: normal, above; pugheaded below.

Bairdiella chrysura (Gudger, 1930; Mansueti, 1958). This anomaly is due to an upraising of the median portion of the cranium. According to Gudger (1930), "The anterior ends of the frontals have been bent almost vertically downward, the parasphenoid has been buckled up almost vertically, and the nasals, ethmoid, and vomer have been bent backward, inward, and upward until they have come to fill quite half of the orbital cavity." Environment and heredity are probable causes of pugheadedness; mechanical injury has been discounted (Mansueti, 1960).

On 25 October 1963, a pugheaded American shad, *Alosa sapidissima* (Wilson), was collected in the Cape Fear River, North Carolina, at river mile 47 (Figure 1). The head in the region of the eyes has been upraised and the top of the head is nearly horizontal but the outline of the lower jaw is normal. The forehead is steep and the upper jaw appears to be lacking. There is an apparent increase in the interorbital width, but no exophthalmia.

This specimen measured 95 mm fork length and was taken in a sample of 25 young-of-the-year American shad ranging from 94 to 115 mm. The mean fork length of the fish in the

Pugheadedness in an American Shad

Pugheadedness has been cited for several fish including brown trout, *Salmo trutta*; carp, *Cyprinus carpio*; a cod, *Gadus* sp.; white perch, *Roccus americanus*; striped bass, *Roccus saxatilis*; largemouth bass, *Micropterus salmoides*; yellow perch, *Perca flavescens*; a percid, *Stizostedion* sp.; and silver perch,

sample was 107 mm. As far as the author knows, this is the first report of pugheadedness in American shad. The specimen collected in the Cape Fear River is in the United States National Museum with Catalog Number USNM 197795.

LITERATURE CITED

- GUDGER, E. W. 1930. Pugheadedness in the striped sea bass, *Roccus lineatus*, and in other related fishes. Bull. Amer. Mus. Nat. Hist., 61(1): 1-19.
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